Tuesday, 5/23/2006 8:29:38 AM

Kim Johnston

Process Sheet

Customer

· : CU-DAR001 Dart Helicopters Services

Job Number

Estimate Number

: 27182 : 10559

P.O. Number This Issue

:NA

: 5/23/2006

S.O. No. : No.

: NC : NIA

: 27181

Type

: LANDING GEAR

Part Number

Drawing Name

: D412664203

Drawing Number

: D412-664-243 REV B

: HIGH AFT X-TUBE 412

Project Number Drawing Revision : N/A

Material

: B AIU:

Due Date

: 6/15/2006

Qty:

1 Um:

Each

Written By

Prsht Rev.

First Issue

Previous Run

Checked & Approved By

Comment

Reformat; Added D3189-1 K/DS : Est Rev:E 64.02.16

Est Rev:F 06-03-29

Remove Coments on Pick List JLM

Additional Product

Job Number:



Seq. #:

Machine Or Operation:

Description:

DC 1.0

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D412-664-203 CHG 003

06 06 05

2.0

D6009129



Crosstube Material



Comment: Qty.:

1.0000 Each(s)/Unit

Total:

1.0000 Each(s)

Pick:

Qty Part number Description Batch

Check OD = 3.500"; ID = 2.250"

3.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE





1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA166

2-Turn first side as per Folio FA166

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243.

4.0

QC1

INSPECT ALL DIM TO DIM SHEET





Comment: INSPECT ALL DIM TO DIM SHEET

06.05.76

W/O:		WORK ORDER CHANGES										
DATE	STEP	PROCEDURE CHANGE		Ву	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector				
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NCR:			WORK ORDER NON-CONFORMANCE (NCR)								
		Description of NC		Corrective Action Section B		Verification	Approval	Approval QC inspector			
DATE	STEP	Section A	Initial Design Mgr	Action Description Design Mgr	Sign & Date	Section C	Approval Design Mgr				
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Part No:	PAR #:	Fault Category:	_ NCR:	Yes .	No.	DQA:	Date:	
NOTE: Date & initial all entries				QA: N	I/C CI	osed:	Date:	

Tuesday, 5/23/2006 8:29:38 AM User: Kim Johnston **Process Sheet** Drawing Name: HIGH AFT X-TUBE 412 Customer: CU-DAR001 Dart Helicopters Services Part Number: D412664203 Job Number: 27182 Job Number: Seq. #: **Machine Or Operation:** Description: MORI SEIKI CNC LATHE LARGE MORI SEIKI 5.0 Comment: MORI SEIKI CNC LATHE LARGE 潮红 1-Turn second side as per Folio FA166 2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243. 3-Polish entire outside surface of crosstube 4- Remove sand and plugs 5-Scribe part # and batch # using vibrating stylus as per Dwg D412-664-243 INSPECT ALL DIM TO DIM SHEET QC1 6.0 Comment: INSPECT ALL DIM TO DIM SHEET SECOND CHECK 7.0 QC8 Comment: SECOND CHECK HAND FINISHING1 HAND FINISHING RESOURCE #1 Comment: HAND FINISHING RESOURCE #1 .1 KT 06-06-06 Chemical Conversion Coat as per QSI 005 4.1 9.0 QC3/5 (0606-040) Comment: Inspect work & Chemical conversion Coat BENDING MACHINE 10.0 Comment: BENDING MACHINE Bend tube as per Dwg D412-664-243 using CNC bender program 412-af and Fólio FT010 DIMENSIONAL CHECK 11.0 Comment: DIMENSIONAL CHECK

W/O:		WORK ORDER CHANGES									
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Part No:	PAR #:	Fault Category:	NCR:	Yes	No	DQA: _		Date:	- pro-
NOTE: Date & initial all entries	*			QA: N	1/C C	losed: _		Date:	

Tuesday, 5/23/2006 8:29:39 AM Date: User: Kim Johnston **Process Sheet** Drawing Name: HIGH AFT X-TUBE 412 Customer: CU-DAR001 Dart Helicopters Services Part Number: D412664203 Job Number: 27182 Job Number: Seq. #: Description: Machine Or Operation: LANDING GEAR RESOURCE 1 LANDING GEAR 1 12.0 Comment: LANDING GEAR RESOURCE 1 1-Drill pilot holes in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551 6 - 06 - 06 - 21 2-Ream hole to finish size in tube as per Dwg D412-664-243using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes. 3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243 for 66-06-21 HAND FINISHING RESOURCE #1 HAND FINISHING1 13.0 Comment: HAND FINISHING RESOURCE #1 · 16-06-Chemical Conversion Coat as per QSI 005 4.1 14.0 OUTSIDE SERVICES Comment: Sub-Contracting OUTSIDE SERVICES Liquid Penetrant Inspection as per QSI 038Or 1207/07/06 D Issue P/O: 1 6 27 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order PACKAGING RESOURCE #1 PACKAGING 1 15.0 Comment: PACKAGING RESOURCE #1. Inspect for transit damage 18 06/07/1 Ensure copy of NDT results attached to work order. DIMENSIONAL CHECK 16.0 000 Comment: Inspect for damage & ensure results are as per Dwg D412-664-203 17.0 SPRAY PAINTING Comment: SPRAY PAINTING 1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2 Form: rprocess Page 3

W/O:		WORK ORDER CHANGES										
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NOTE: Date & initial all entries				QA: N	1/C C	losed:	Date:	

Tuesday, 5/23/2006 8:29:39 AM Date: User: Kim Johnston **Process Sheet** Drawing Name: HIGH AFT X-TUBE 412 Customer: CU-DAR001 Dart Helicopters Services Job Number: 27182 Part Number: D412664203 Job Number: Seq. #: Description: **Machine Or Operation:** Inspect Spray Paint 18.0 QC14 **Comment:** Inspect Spray Paint Wrap in plastic bag to protect from scratches Abrasion Strip 19.0 Comment: Qty.: Total: 1.7640 f(s) Pick: Qty Part number Description Batch 06-08-31 25 2 D2856-600(Cut to 10.090") Abrasion Strip D2856600 Abrasion Strip 20.0 Comment: Qty: 1.0080 f(s)/Unit Total: 1.0080 f(s) Pick: Qty Part number Description Batch 1 D2856-600(Cut to 10.870") Abrasion Strip **B2Y328** 06-08-31 D28961 Support Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s) Pick: Qty Part number Description Batch 06 08 31 Support **B 26683** 1 D2896-1 22.0 D31891 Chafing Shield Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s) Pick: **Description Batch** Qty Part number 06 08 31 Chafing Sheild 1327190 2 D3189-1 MS2192028 Clamp(per MIL-DTL-8783C) Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s) Pick: **Description Batch** Qty Part number 27 OB 8 31 Clamp M100479 4 MS21920-28

W/O:			WORK ORDER CHANGES										
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DATE	STEP	Section A	Initial Design Mgr	Action Description , Design Mgr	Sign & Date	Section C	Design Mgr	Approval QC Inspector	
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Part No:	PAR #:	Fault Category:	NCR:	Yes No	DQA:	Date:	·
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Date: Tuesday, 5/23/2006 8:29:39 AM User: Kim Johnston **Process Sheet** Drawing Name: HIGH AFT X-TUBE 412 Customer: CU-DAR001 Dart Helicopters Services Part Number: D412664203 Job Number: 27182 Job Number: Description: Seq. #: **Machine Or Operation:** clamp(per MIL-DTL-8783C) 24.0 MS2192030 2.0000 Each(s)/Unit Total: 2.0000 Each(s) Comment: Qty.: Pick: **Description Batch** Qty Part number 06 Clamp 14101568 2 MS21920-30 LANDING GEAR RESOURCE 1 LANDING GEAR 1 Comment: LANDING GEAR RESOURCE 1 06 08 -31 Assemble as per Dwg D412-664-203 INSPECT WORK TO CURRENT STEP 26.0 QC5 Comment: INSPECT WORK TO CURRENT STEP 27.0 **PACKAGING** Comment: PACKAGING RESOURCE #1 Pick Packing Kit 28.0 AN640A Bolt Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s) ·Bolt Batch: M/01/2 AN641A 29.0 Comment: Qty.: Total: 2.0000 Each(s) Bolt Batch: 30.0 Comment: Qty.: 18.0000 Each(s)/Unit Total: 18.0000 Each(s) Washer Washer
Batch: <u>M100697</u> \(\int \) \(\begin{align*} \Boto \land \sigma \\ \la

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Part No:	PAR #:	Fault Category:	NCR:	Yes (No) DQA:	Date: <u>6/6/6</u>
NOTE: Date & initial all entries				QA: N/C Closed:	Date:

Date: T	Tuesday, 5/23/2006 8:29:39 AM		
	(im Johnston	Process Sheet	
Custom	er: CU-DAR001 Dart Helicopters Services	Drawing Name: HIGH	AFT X-TUBE 412
Job Numb	er: 27182	Part Number: D4126	564203
Job Number:			
Seq. #:	Machine Or Operation:	Description	on:
31.0	MS21042L6	Nut	
Com	nment: Qty.: 6.0000 Each(s)/Unit T Nut	otal: 6.0000 Each(s)	,
	Batch: M 100151	ABO6/08/01	,
32.0	QC4	INSPECT 100% KITS FOR COMPLETI	ENESS
Com	ment: INSPECT 100% KITS FOR COM	PLETENESS //	14/8/ 01 (1)
33.0	PACKAGING 1	PACKAGING RESOURCE #1	
Com	ment: PACKAGING RESOURCE #1		
	Identify and pack for shipping as Location:	per PPP D412-664-203	
	PPP Rev:	10 6/9/11	//
34.0	DC	DOCUMENT CONTROL	
Com	ment: DOCUMENT CONTROL	·	
	Inspection Level 21		D06/09/06
Job Completion			U dollos
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NOTE: Date & initial all entries				QA: N	1/C C	osed:	Date:	-

DART AEROSPACE LTD	Work Order:	27182
Description: Crosstube Assembly (412 High Aft)	Part Number:	D412-664-243
Inspection Dwg: D412-664-243 Rev: B		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

X First Article Prototype

	spection Sheet	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
	2.684	+0.005/-0.000	7.687				
	2.748	+0.005/-0.000	7.752				
	2.884	+0.005/-0.000	7.887				
	3.019	+0.005/-0.000	3.027	·			
	3.163	+0.005/-0.000	3.165				
	3.308	+0.005/-0.000	3.310				
⋖	3.429	+0.005/-0.000	3.430	_			
SIDE	2.990	+0.005/-0.000	7.997			'	
IS	2.618	+0.005/-0.000	7.621	_			
Ė	0.200	+/-0.010	. 200				
	R0.063	+/-0.010	.063				
	R0.500	+/-0.010	,500				
	4.971	+/-0.001	4-571				
	2.684	+0.005/-0.000	2.689	-			
	2.748	+0.005/-0.000	7-753)			
	2.884	+0.005/-0.000	7-888	1			•
	3.019	+0.005/-0.000	3.024				
	3.163	+0.005/-0.000	3.167	-			
	3.308	+0.005/-0.000	3.311	/			
	3.429	+0.005/-0.000	3.431	/			
E B	2.990	+0.005/-0.000	7.993				
SIDE	2.618	+0.005/-0.000	7.622				
,							,
	0.200	+/-0.010	.700				· · · · · · · · · · · · · · · · · · ·
	R0.063	+/-0.010	.063				
	R0.500	+/-0.010	.500	/			
	4.971	+/-0.001	4.971				
	124.09	+/-0.020	124.09	<u> </u>			
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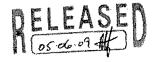
Measured by: 3G-	Audited by:	Prototype Approval:	N/A
. Date: 96,95,76	Date: @ (3/06/02	Date:	N/A

Rev	Date	Change		Revised by	Approved
Α	04.06.16	New Issue	(P/O D412-664-203)	KJ/JLM	1
В	06.03.09	Dwg Rev updated		KJ/JLM 🔣	ad
				101	7~7





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DESIGN	Pн	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
CHECKE		APPROVED	DRAWING NO. REV. B D412-664-243 SHEET 1 OF 3
DATE 05.02	2.04		TITLE SCALE CROSSTUBE ASSEMBLY (412 HI AFT) NTS
Α		01.10.17	NEW ISSUE
В		05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES



Qty	Part Number	Description		
X	D412-664-243	CROSSTUBE ASSEMBLY (412 HIGH AFT)		
1	D6009-129	CROSSTUBE		
1	D2896-1	SUPPORT		
2	D2856-600-1009	ABRASION STRIP		
1	D2856-600-1087	ABRASION STRIP		
4	MS21920-28	CLAMP		
2	MS21920-30	CLAMP		
2	D3189-1	CHAFING SHIELD		

GENERAL NOTES:

- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6009-129

FINISHED LENGTH = 124.09±0.020

- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 - PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

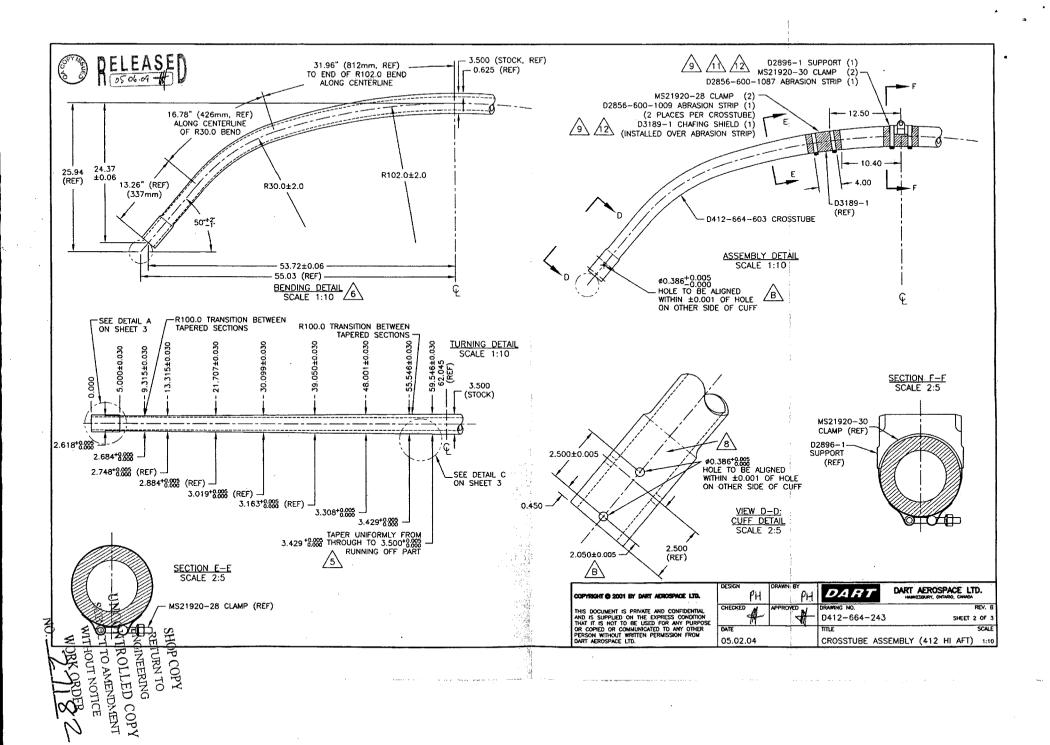
PAINT OUTSIDE PER DART 005 4.2

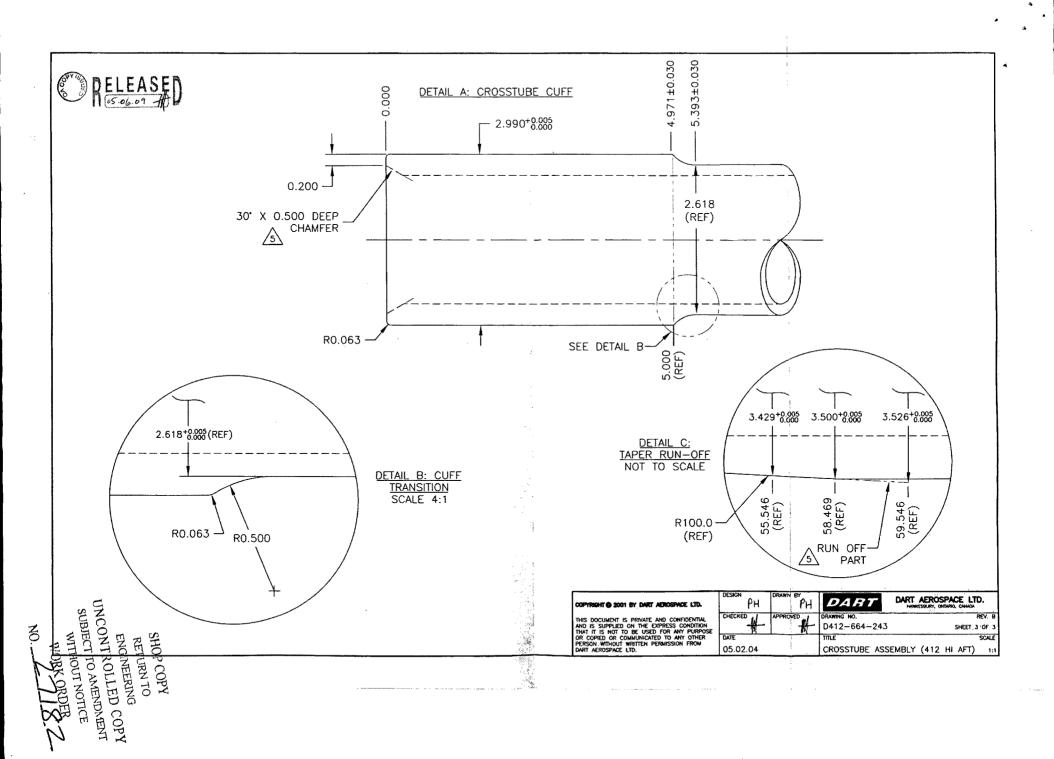
- PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
- BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS COPY
- INSTALL D2856-600-1009 AND D2856-600-1087 ABRASION STRIPS WITH A 0.13 (REF) GAR ONE TO BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2896-1 SUPPORT, PER QSI 035 ENGINEERING
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE THEOLLED COPY OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS ON THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS OUTSIDE SURFACE MUST BE SMOOTH SURFACE MUS WITHOUT NOT SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) IT IS OPTINAL TO TO SEAL EDGES OF SUPPORTS USING SIKAFLEX-241/291 SEALANT. NO.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

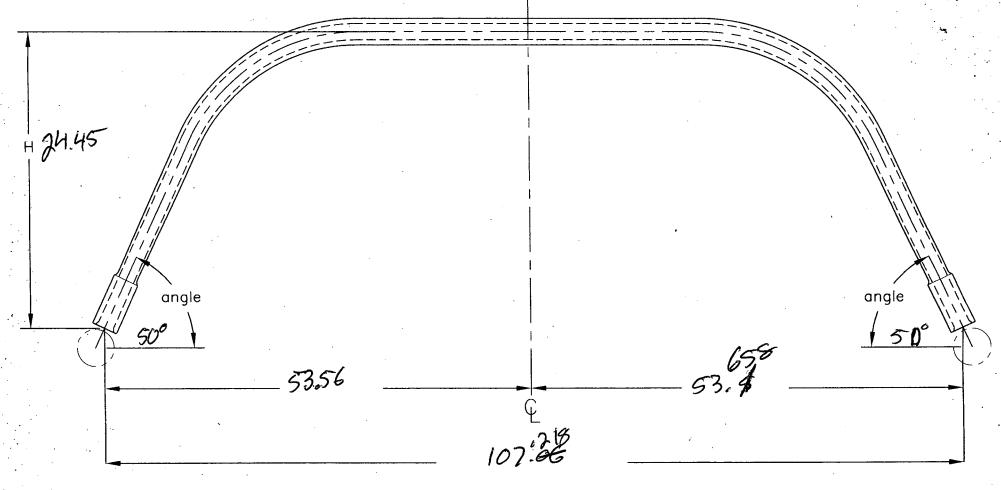
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SUBJECT TO AMENDMENT WORK ORD







DATE: 06 06 19

DESCRIPTION: <u>041264263</u>

BATCH NO: 27182

DRAWING: 10412-664-243 Roub

н:<u>23.37</u>

1/2 SPAN: 53.77

TOTAL SPAN: 107.44

ANGLE:_________________

B



15146360031

681 Ave. Lepine, Dorval, Québec H9P 1G3 Tél.: (514) 636-1000 • Fax: (514) 636-0031 W.O. $N_{\bar{0}}$ 34464

A.M.O. Number: 46/90

NON-DESTRUCTIVE TESTING REPORT

AIRCRAFT / COMPONENT INFORMATION

REGISTA	ATI	JN:
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MODEL/TYPE:

SERIAL NUMBER:

TOTAL HR/LDG:	OPERATED BY:		BASED AT:	
Section 4.1.1 (on Qty (10) P/N D	(14) cross tube (externa file at client) - parts del 212-664-101 S/N'	livered to HeathAir.	TM E-1417-05 and the Da B27461, B27459, B2727 327458 & B27462,	
RADIOGRAPHY	ULTRASONIC	PENETRANT	MAGNETIC PARTICLE	EDDY CURRENT
Cross Tubes. Note: A Level 3 Ardrox 97	-	ed for the requested	ce with the above required	
THE MAINTE	NANCE DESCRIBED ABOVE HAS BEEN I THE APPLICABLE STANDARDS OF		DATE JU DATE INSPECTION STAMP(S)	ly 11, 2006
CUSTOMER: Dart Aeros	,	TOMER INFORM	ATION P.O. NUMBER CONTACT NAME	1627 Linda
ABOUR	•			\$
MATERIALS				
RAVEL EXPENSES	0	1		<u>GST</u> PST
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	INVASCE MA		TOTAL	ı s